

EDINBURGH.

Royal Society, February 3.—Prof. Hudson Beare, vice-president, in the chair.—J. S. Anderson and G. B. Burnside: A new method of starting mercury-vapour apparatus. The vacuum tube was so arranged that liquid mercury filled the region which was subsequently to be filled with the incandescent vapour. By an ingenious device the current as it passed by the platinum into the interior of the tube heated the lower end, expanding the mercury upwards past a narrow constriction in the tube. The mercury column became broken at this constriction, and at once a small arc light through the mercury vapour was formed. This rapidly grew, pushing the liquid mercury to the other end of the tube. The resistance of the circuit being thereby greatly increased, the heating effect in the small outside coil was correspondingly diminished, and thus automatically the lamp was its own temperature regulator. Important details were given as to the method of making the apparatus.—J. McWhan: The electron theory of thermoelectricity. This was an application of thermodynamic principles to the electron theory of thermoelectricity, the assumption being that from each metal at all temperatures electrons evaporate producing a definite electron pressure in the neighbourhood. Expressions for the Thomson effect and for the thermoelectric power were obtained.—N. P. Campbell: The application of Manley's differential densimeter to the study of sea waters on board ship. The differential densimeter was described in 1907 (see NATURE, vol. lxxvi., p. 311), and its use explained. Briefly described, it is a modification of Hare's method for comparing densities of liquids. As originally constructed it was not found very convenient for use on board ship. In the present paper certain modifications are described, and results are given showing that it can be used effectively at sea. The density of each sample of sea water may be determined with ease and accuracy at the time it is collected. One great merit is that since the sample being studied is balanced against a standard solution of known density at the same temperature, and since the temperature correction is the same for both solutions, there is no necessity for applying this temperature correction.

PARIS.

Academy of Sciences, February 17.—M. F. Guyon in the chair.—G. Bigourdan: Observations of nebulae made at the Paris Observatory.—Paul Appell: The equilibrium of wires the elements of which attract or repel each other as a function of the distance.—L. Lecornu: The cause of a boiler explosion. A discussion of the causes of the explosion of a boiler forming part of a hot-water system in a private house.—L. Maquenne and E. Demoussy: The value of the chlorophyll coefficients and their relations with true respiratory coefficients. The results of a long series of experiments are summarised in eleven conclusions, stress being laid on the variation in the respiratory coefficient of leaves with the stage of growth.—M. Gouy: The production of intense magnetic fields at the surface of the sun. A discussion of the possibility of the views currently held regarding the production of intense magnetic fields in sun-spots.—W. Kilian and Ch. Pussenot: New data relating to the tectonic in the neighbourhood of Briançon.—J. Violle: The inconvenience which might be caused to telegraphs and telephones in the neighbourhood of certain special lightning conductors called *niagaras*. Report of a committee on lightning conductors. It is recommended that no receiving station or telegraph line should be nearer than 20 metres to this special form of lightning conductor.—M. Vuillemin was elected a correspondent for the section of botany in the place of

the late M. Strasburger.—Maurice Gevrey: The nature of the solutions of certain partial differential equations.—A. Pcheborski: Some polynomials with minimum deviations from zero within a given interval.—M. Valiron: Integral functions of order zero.—Carl Stormer: A mechanical problem and its applications to cosmic physics. The results of a theorem on the trajectories of electrified corpuscles in the field of an elementary magnet. Amongst the applications mentioned as possible are the theory of the aurora borealis of Arrhenius, and the experiments of Birkeland bearing on the zodiacal light, comets, and Saturn's rings.—U. Cisotti: The rigid movements of the surface of a vortex.—A. Grumbach: The retardation of electrolysis with a polarising electromotive force.—Georges Meslin: The reciprocal influence of parallel antennae on the conditions of reception of Hertzian waves.—André Blondel: The bipolar diagram of synchronised alternators working as generators or receivers on a network a constant potential.—G. Reboul: The influence of the geometric form of solids on the chemical actions which they undergo. When a solid is acted on by a gas the attack is most active at the points where the curvature is greatest.—Jean Bielecki and Victor Henri: A quantitative study of the absorption of the ultra-violet rays by fatty acids and their esters in aqueous and alcoholic solutions. In a body of the formula $C_nH_{2n+1}.CO_2R$ the absorption is determined by the acid group, the alkyl group having slight influence.—A. Sénéchal: The violet chromium sulphates. A study of the water contents of the crystallised salt in various degrees of hydration.—J. Bougault: Phenyl- α -oxycrotonic acid.—P. Lebeau and A. Damiens: The estimation of acetylene and ethylene hydrocarbons in mixtures of gaseous hydrocarbons. An alkaline solution of the double iodide of mercury and potassium is suggested as absorbent for gases of the acetylene type; for ethylene, concentrated sulphuric acid containing 1 per cent. of vanadic acid is shown to be a satisfactory reagent.—Pierre Lesage: The curve of the limits of germination of seeds after remaining in saline solutions.—R. de Litardière: The variations of volume of the nucleus and the cell in some ferns during the heterotypal prophase.—G. André: The migration of the mineral elements and the displacement of these elements in leaves immersed in water.—R. Fosse: The formation of urea by the higher plants.—M. Tcherning: A theory of vision.—Jacques Mawas: The asymmetry of the ciliary body and its importance in astigmatic accommodation and movements of the crystalline lens.—Jules Courmont and A. Rochaix: Immunisation against *Staphylococcus pyogenes aureus* by way of the intestine. The introduction of the dead organisms into the intestine confers a certain degree of immunity, and the infection is profoundly modified in its characters.—Casimir Cépède: The Cytopleurosporea.—Venceslas Moycho: Study of the action of the ultra-violet rays on the ear of the rabbit.—M. Deprat: The Palaeozoic strata of the Black River (Tonkin).—Maurice Lugeon: A new mode of fluvial erosion.

BOOKS RECEIVED

Anatomical Model of the Mare. (London: Vinton and Co., Ltd.) 2s. 6d. net.

Streifzüge an der Riviera. By Prof. E. Strasburger. Dritte Auflage. Pp. xxvi+582. (Jena: G. Fischer.) 10 marks.

New Log and Versine Altitude Tables. By Lieut. R. de Aquino. Pp. v+36*. (London: J. D. Potter.) 2s. 6d. net.

Siebente Versammlung der internationalen Kommission für wissenschaftliche Luftschiffahrt in Wien

28 Mai bis 1 Juni, 1912. Sitzungsberichte und Vorträge. Pp. v+172. (Vienna: K. K. Hof und Staatsdruckerie.)

Transport de Force: Calculs Techniques et Economiques des Lignes de Transport et de Distribution d'Energie Electrique. By C. Le Roy. Deux. Partie. Pp. 143. (Paris: A. Hermann et Fils.) 6 francs.

Aborigines of South America. By the late Col. G. E. Church. Edited by Sir C. R. Markham. Pp. xxiv+314. (London: Chapman and Hall, Ltd.) 10s. 6d. net.

Calendario della Basilica Pontificia del Santissimo Rosario in Valle di Pompei per l'Anno 1913. (Valle di Pompei: Scuola Tipografica Pontificia.)

Canada. Department of Mines. Mines Branch. Report of the Building and Ornamental Stones of Canada. Vol. i. By W. A. Parks. Pp. xiii+376+vi+lxvii plates. (Ottawa: Government Printing Bureau.)

Transactions of the Institution of Engineers and Shipbuilders in Scotland. Fifty-sixth Session, 1912-13. Part iv. Pp. 109+diagrams. (Glasgow.)

A Treatise on Hydromechanics. By A. S. Ramsay. Part ii., Hydrodynamics. Pp. xiii+360. (London: G. Bell and Sons, Ltd.)

DIARY OF SOCIETIES.

THURSDAY, FEBRUARY 27.

ROYAL SOCIETY, at 4.30.—The Thermal Properties of Carbonic Acid at Low Temperatures: C. F. Jenkin and D. R. Pye.—Re-reductions of Dover Tidal Observations, 1883-1884, etc.: E. Roberts.—The Formation of the Anthocyan Pigments of Plants. Part IV. The Chromogens: Prof. F. Keeble, E. F. Armstrong, and W. N. Jones.—The Formation of the Anthocyan Pigments of Plants. Part V. The Chromogens of White Flowers: W. N. Jones.—The Changes in the Breathing and the Blood at Various High Altitudes: Mabel P. Fitzgerald.

CONCRETE INSTITUTE, at 7.30.—Economy in Reinforced Concrete Design: J. A. Davenport.

SOCIETY OF DYERS AND COLOURISTS, at 8.—Starch and Decomposition Products: Dr. M. Hamburg.—A Method for the Testing of Malt Extracts: R. J. May.—The Valuation of Malt Products: W. P. Dreaper.—A Contribution to the Methods of Testing Malt Extracts: Dr. A. Herz.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Fourth Kelvin Lecture.—The Ohm, the Ampere, the Volt, A Memory of Fifty Years (1862-1912): Dr. R. T. Glazebrook.

FRIDAY, FEBRUARY 28.

ROYAL INSTITUTION, at 9.—Active Nitrogen: Hon. R. J. Strutt.

PHYSICAL SOCIETY, at 5.—Interference by Röntgen Radiation: Prof. C. G. Barkla and G. H. Martin.—Alternating-current Magnets: Prof. E. Wilson.—A Graphical Method of Optical Imagery: W. R. Bower.

SATURDAY, MARCH 1.

ROYAL INSTITUTION, at 3.—The Properties and Constitution of the Atom: Sir J. J. Thomson, O.M.

MONDAY, MARCH 3.

SOCIETY OF ENGINEERS, at 7.30.—Presidential Address: A. Valon.

ARISTOTELIAN SOCIETY, at 8.—Does Consciousness "Evolve"? Prof. L. P. Jacks.

SOCIETY OF CHEMICAL INDUSTRY, at 8.—Notes on Chinese Antimony Ores, Crude and Regulus: W. R. Schoeller.—Notes on Thermometry: J. H. Coste.

VICTORIA INSTITUTE, at 4.30.—Pompeii: E. J. Sewell.

ROYAL SOCIETY OF ARTS, at 8.—Cantor Lecture—Coal Gas as a Fuel for Domestic Purposes: F. W. Goodenough.

TUESDAY, MARCH 4.

ROYAL INSTITUTION, at 3.—The Stars and their Movements: Prof. H. H. Turner.

RÖNTGEN SOCIETY, at 8.15.—The Physiological Effects of the Magnetic Field: Dr. H. Lewis Jones.—The Rationale of the Static Current: Dr. H. Humphris.

ROYAL ANTHROPOLOGICAL INSTITUTE, at 8.15.—A Saxon Graveyard at East Shefford, Berks: H. Peake and Dr. E. A. Hooton.

ZOOLOGICAL SOCIETY, at 8.30.—Contributions to the Anatomy and Systematic Arrangement of the Cestoidea.—IX. A New Genus of Ichthyosaniids: Dr. F. E. Beddard.—Zoological Results of the Third Tanganyika Expedition conducted by Dr. W. A. Cunningham, 1904-1905. Report on the Branchiura: Dr. W. A. Cunningham.—New Species of Rhopalocera from Costa Rica: W. Schaus.—Notes on Plankton collected across the Mouth of the St. Croix River opposite to the Biological Station at St. Andrews, New Brunswick, in July and August, 1912: Dr. A. Willey.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Notes on City Passenger-Transportation in the United States: G. D. Snyder.

WEDNESDAY, MARCH 5.

GEOLOGICAL SOCIETY, at 8.—The "Kelloway Rock" of Scarborough: S. S. Buckman.—Jurassic Ammonites from Jebel Zorghuan (Tunis): L. F. Spath.

ENTOMOLOGICAL SOCIETY, at 8.

SOCIETY OF PUBLIC ANALYSTS, at 8.—The Accurate Determination of Carbon Dioxide in Carbonates: F. S. Sinnatt.—Egyptian Butter and

Semna: S. H. Trimen.—The Bacterial Testing of Disinfectants: A Practical Criticism: C. T. Kingzett and R. C. Woodcock.—A Quick and Improved Method for the Estimation of Boric Acid in Milk and Cream: F. W. Richardson and W. K. Walton.—The Moisture in some English, Colonial, and Foreign Butters during 1910-1912, with a Note on the Mitchell-Walker Moisture Test: L. Gowing-Scoopes.

ROYAL SOCIETY OF ARTS, at 8.—Ordinary Meeting.—The Development of Research Work in Forest Products: E. R. Burdon.

THURSDAY, MARCH 6.

ROYAL SOCIETY, at 4.30.—Probable Papers: An Automatic Method for the Investigation of the Velocity of Transmission of Excitation in Mimosa: Prof. J. C. Bose.—The Evolution of the Cretaceous Asteroidea: W. K. Spencer.—A Preliminary Note on the Fossil Plants of the Mount Potts Beds, New Zealand, collected by Mr. D. G. Lillie, Biologist to Capt. Scott's Antarctic Expedition in the *Terra Nova* in 1911: Dr. E. A. Newell Arber.—(1) Trypanosomes found in the Blood of Wild Animals Living in the Sleeping Sickness Area, Nyasaland; (2) Trypanosome Diseases of Domestic Animals in Nyasaland. II. Trypanosoma Caprae (Kleine); (3) Morphology of Various Strains of the Trypanosome causing Diseases in Man in Nyasaland. I. The Human Strain: Surg.-Gen. Sir D. Bruce, F.R.S., Majors D. Harvey, A. E. Hamerton, and Lady Bruce.

ROYAL INSTITUTION, at 3.—Surface Energy: W. B. Hardy.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Recent Developments in the Street Lighting of Manchester: S. L. Pearce and H. A. Ratcliff.

ROYAL SOCIETY OF ARTS, at 4.30.—Indian Section.—The City of Karachi: J. F. Brunton.

FRIDAY, MARCH 7.

ROYAL INSTITUTION, at 9.—Photography of the Paths of Particles Ejected from Atoms: C. T. R. Wilson.

SATURDAY, MARCH 8.

ROYAL INSTITUTION, at 3.—The Properties and Constitution of the Atom: Sir J. J. Thomson, O.M.

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